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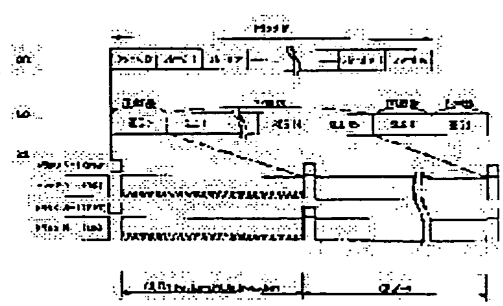
(54) OPTICAL DISK AND OPTICAL DISK DEVICE

(57)Abstract:

PROBLEM TO BE SOLVED: To prevent deterioration in data due to a wobble by recording address information only on one side wall between two walls forming a groove with the wobble and providing a discretely arranged address area and a data area held between two walls not wobbled.
SOLUTION: Each frame is divided to 46 pieces of segments SEG0-SEG45, and the segment SEG0 of the top part of the segment is made an address segment, and the SEG1-SEG45 are made data segments. The information such as address, etc., is recorded by so-called single-side wobble performing the wobble only on one side wall between two walls forming the groove. The data are recorded on the data segments SEG1-SEG45, and the address information, etc., by the wobble aren't recorded. Thus, the deterioration in a regenerative signal of the main data due to a light quantity change and a disturbance in the polarization direction of light is prevented, and an S/N ratio is improved.



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(A) Relevance to claim

The following is a translation of passages related to claims 1, 6, 8, 12, 14, and 17 of the present invention.

The following is inventors' comments on the prior art document generally related to the present invention.

(B) Translation of the relevant passages.

[0069] Now, the following description discusses clock marks of the optical disk D in reference to drawings.

[0070] The optical disk D has a clock mark (CM) at the head of each of the address and data segments as shown in Figure 5.

[0071] As shown in Figure 14(a), the clock mark of the optical disk D forms a convex or mirror portion in a groove and a concave or dent portion so as to cause a variation in the amount of light when a laser spot moves on the track along its tangential direction. If a four-part photodetector is used to detect reflection of the

laser projected to form a spot on the land for tracking, a tangential push-pull signal is detected as an S-figure shaped curve.

[0072] For example, if a four-part photodetector is used to detect reflection of the laser projected to form a spot on the land for tracking, a tangential push-pull signal is detected as an S-figure shaped curve as shown in Figure 14(b). When the reflection of the laser is detected at X_1, the reading of the tangential push-pull signal is 0. When the reflection of the laser is detected at X_2 where the laser spot moves from a land onto a clock mark, the tangential push-pull signal reaches its peak due to the high reflection on the land and low reflection on the clock mark. When the reflection of the laser is subsequently detected at X_3 where the laser spot moves from a clock mark onto a land, the tangential push-pull signal changes its sign and reaches its bottom, conversely to the foregoing case of X2, due to the high reflection on the land and low reflection on the clock mark. When the reflection of the laser is detected at X_4, the reading of the tangential push-pull signal is 0.

[0073] To take another example, if a four-part photodetector is used to detect reflection of the laser projected to form a spot on the groove for tracking, a tangential push-pull signal is detected as an S-figure

shaped curve as shown in Figure 14(c). When the reflection of the laser is detected at X_1, the reading of the tangential push-pull signal is 0. When the reflection of the laser is detected at X_2 where the laser spot moves from a groove onto a clock mark, the tangential push-pull signal reaches its bottom due to the small reflection on the groove and high reflection on the clock mark. When the reflection of the laser is subsequently detected at X_3 where the laser spot moves from a clock mark onto a groove, the tangential push-pull signal changes its sign and reaches its peak, conversely to the foregoing case of X2, due to the low reflection on the groove and high reflection on the clock mark. When the reflection of the laser is detected at X_4, the reading of the tangential push-pull signal is 0.

[0074] As detailed in the above, the optical disk D has clock marks which cause a variation in the amount of the reflection when a laser is projected passing over one of them. A tangential push-pull signal is detected based on the variation in the reflection, and a clock is reproduced from the signal.

[0075] Hence, the optical disk D can reproduce stable clock signals independently from data, which allows the data to be stored in improved density. The reproduction of clock signals from the optical disk D is not

susceptible to tracking conditions, which also improves data storage density. Besides, in the optical disk D, clock signals can be reproduced from marks with shorter lengths, i.e., lower redundancy, which further contributes to improved data storage density.